

## **ABSTRACT**

A device for determining physical properties of aerated particulate materials. The device may be formed from an inner container positioned in an outer container, wherein the inner container is adapted to hold a particulate material. An air source is in fluid communication with the inner container for passing air through the inner container. A load application device may extend into the inner container for applying an axial load to a particulate material while air is flowing through the particulate material. The device may include an environmental chamber for controlling humidity and temperature of the air being passed through the particulate material. The device may also include numerous sensors for measuring temperature, pressure, changes in volume, humidity, and other parameters. The sensors may be monitored by a storage device, such as a computer.